MCF 3M Opener

For the function;

$f(x) = 2x^2 - 6x - 14$

What are the zeros?
What is the axis of symmetry i.e. x=?
What is the optimum point of this function?

Feb 11-3:37 PM

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Feb 11-3:37 PM

$(x+5)^2 - 6 = (x+5)$

$(x+5)(x+5) - 6 = (x+5)$

$x^2+10x+25-6 = (x+5)$

$x^2+10x+19 = (x+5)$

$x^2+10x+19-(x+5) = 0$

$x^2+10x+19-x-5 = 0$

$x^2+9x+14 = 0$

9	M
+9	+14
7	2

$x^2+7x+2x+14 = 0$

$x(x+7)+2(x+7) = 0$

$(x+7)(x+2) = 0$

$(x+7)(x+2) = 0$

$s = -7 \quad t = -2$

$(-7, 0) \quad (-2, 0)$

Mar 5-9:56 AM

Section 3.3 p143

Solving Equations by Graphing

Model Rocket

$h(t) = -5t^2 + 15t + 20$

Solution #1

TI83 - 2nd Trace

i) zeros
ii) vertex max/min

(4) zeros

(1.5, 31.25)

h K

20m - initial height

$D = \{t \in R \mid 0 \le t \le 4\}$

$R = \{h(t) \in R \mid 0 \le h(t) \le 31.25\}$

Mar 4-1:56 PM

i) Algebraic

$h(t) = -5t^2 + 15t + 20$

$h(t) = -5(t^2 - 3t - 4)$

$h(t) = -5(t-4)(t+1)$

A	M
-3	-4
-4	+1

4 −1

$x_v = \frac{s+t}{2}$

$= \frac{4-1}{2}$

$= \frac{3}{2}$

$= 1.5$

Substitute $x = 1.5$

$h(t) = -5(1.5-4)(1.5+1)$

$= -5(-2.5)(2.5)$

$= -5(-6.25)$

$= +31.25$

Mar 4-2:17 PM

The rocket reaches its maximum height of 31.25m at 1.5 sec. The rocket hits the ground at 4sec. The rocket is launched from an initial height of 20m.

Mar 4-2:23 PM

ie

$x^2 - 8x + 12 = -3$

$x^2 - 8x + 12 + 3 = -3 + 3$

$x^2 - 8x + 15 = 0$

3 & 5 Roots of (-3)

(3, -3) (5, -3)

vertex (4, -1)

Mar 4-2:25 PM

P147

Oct 4-7:39 AM

$P(t) = 0.5t^2 + 10t + 300$ p147

P(t) = measured in thousands

t = time in years t = 0 year 2000

At year 2000 = 300 000

At year t = 10 or 2010 = 450 000

Population reaches 1050 or 1 050 000 at year 2030 (t = 30)

Mar 4-2:35 PM

$1050 = 0.5t^2 + 10t + 300$

$0 = 0.5t^2 + 10t + 300 - 1050$

$0 = 0.5t^2 + 10t - 750$

The population will reach 1 050 000 at t = 30 (or year 2030)

q 2, 3, 4 odds 5 wb 6, 8, 9 & 10^a

p149-151

Mar 5-10:37 AM